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MONTANA RAIL PLAN UPDATE

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Prepared by:

The Transportation Division
Montana Department of Commerce

November, 1986

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RARUS RAILWAY COMPANY
(RDM Siding)

The 1984 Montana Rail Plan Update reviewed the status of the Butte, Anaconda & Pacific Railway (BAP) (Chapter 5-49). On March 21, 1985, the BAP was transferred to State of Montana ownership under an agreement with ARCO, the state, and a newly formed short line operation titled Rarus Railway Company.

By agreement, the state assumed ownership of the 115 mile track and properties. Rarus Railway Company received a lease purchase to the property and acquired the operating equipment, rolling stock, and several yard, maintenance and administration structures within Anaconda. Rarus assumed common carrier rights and resumed rail operations.

BAP characteristically was a company-supported subsidiary primarily sustained by the mining interests at ARCO. ARCO totally shut down these operations in 1984 leaving the newly formed Rarus a very small but essential market center.

Through diligent effort, Rarus has promoted new rail uses including a major shipper, RDM Multi-Enterprises.

The Montana Department of Commerce, Intermodal Commodities Bureau, is investigating the possibility of assisting Rarus Railway Company (Rarus) in the construction of a rail siding to help stabilize the railroad's economic future.

This proposed project entails construction of 750 feet of rail siding to accommodate hopper cars used by RDM Multi-Enterprises Inc. (RDM) to load shipments of slag at the RDM plant site which presently utilizes the Rarus main line as the primary loading site.

Rarus proposes to build this siding to eliminate main line rail traffic congestion, reduce operating costs, decrease the possibility of accidents, and enhance customer service.

Construction Costs

The expense of constructing the new siding will be \$43,120. These costs are tabulated in Table 1-1 and include only construction related costs.

Rail Service

Service on this line is provided one or two times per week from the Rarus yard in Anaconda. The status and issues concerning this line project are:

- The current service to customers in Butte and Silver Bow is compounded and interrupted by the RDM hopper cars spotted on the main line at the loading site.
- There is currently a complex procedure for switching the cars into the east Anaconda yard and returning the cars to the RDM loading site. These movements are tabulated in Appendix 1-A.
- The additional costs associated with this operation as it now stands amount to approximately \$128,000 per year.
- The line is a light density line not presently subject to abandonment. The economic vitality of the line operator will be greatly improved by the proposed construction undertaking.

Truck Traffic

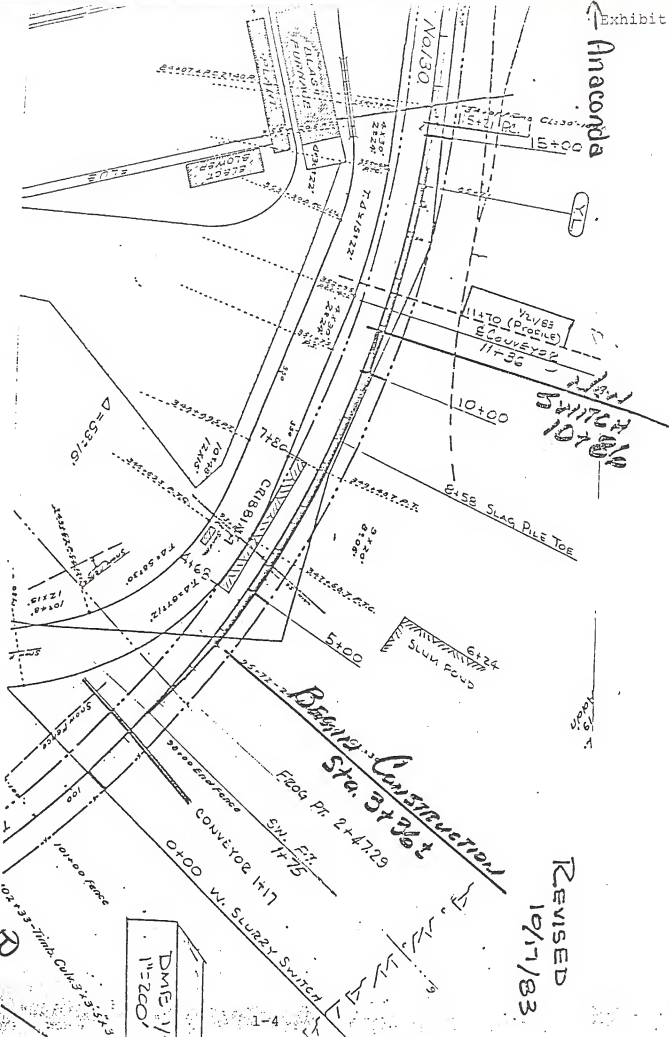
Because of the nature, volume and destination of the commodity being shipped by RDM, truck traffic is not a viable alternative because of extra freight expenses incurred in transporting. The commodity simply could not move economically by truck.

Estimated Cost Savings

The estimated annual operations cost savings are shown in Table 1-2. The total represents cost savings with the benefit of having the siding installed.

Conclusion

The benefit/cost ratio for this project is greater than 7.0 (see TABLE 1-3). This siding is essential to the unimproved economic future of Rarus Railway Company and its customers. It is felt that if this project is undertaken, it will improve and stabilize rail traffic and service in southwestern Montana. Capital assistance is necessary because of the prohibitive costs of new siding construction.



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$$D_{ME} = 1/1'' = 2CO'$$

Butte

TABLE 1-1

GRADING:

750 ft. @ \$8/ft.	\$ 6,000
-------------------	----------

LABOR:

Lay 750 ft. of Track	\$ 2,700
Distribute Ballast	600
Line, Surface, Dress & Tamp	1,400
Construct One Switch	<u>4,100</u>
	\$ 8,800
Fringe & Overhead	<u>4,400</u>
	\$13,200

MATERIALS:

40	- 100# Rail, 26 Ton	\$ 3,100
8	- Switch Rails, 5 Ton	600
418 pcs.	- 7 x 9 x 8' Ties	8,400
1 set	- Switch Ties	1,400
836 pcs.	- 100# Tie Plates	700
80 pcs.	- 100# Headfree Jt. Bars	200
7 kegs	- Track Spikes	600
2 kegs	- Track Bolts	200
1	- Switch	<u>5,600</u>
		\$20,800
	Store Expense	<u>3,120</u>
		\$23,920

	<u>TOTAL</u>	
GRADING		\$ 6,000
LABOR		13,200
MATERIAL		<u>23,920</u>
		<u>\$43,120</u>

SOURCE: Montana Department of Commerce

TABLE 1-2
COST SAVINGS
Rarus Railway Company

				<u>Time Saved With Siding</u>
1.	Year Work:	One Per Week		
		70 - 38	=	32 minutes
2.	Road Work:	One Per Week		
	(No empties)	116 - 41	= 75	
	Respot Plant	33% of 40	= 13 =	88 minutes
3.	Road Work:	Two Per Week (Maximum)		
	(Empties)	151 - 56	= 95	
	Respot Plant	33% of 40	= <u>13</u>	
			108	
		x 2	=	216 minutes
TOTAL SAVINGS				
WITH SIDING				
			336 minutes	
			or	
			5.6 hours	
			x 48.22/hour	
			\$270.03 per week	
			\$1,170.13 per month	x 12 = \$14,041.56

Savings Per Year
RDM Multi-Enterprises, Inc.

60/80 Normal man hours/week totaling	\$ 81,900
1 tank diesel fuel - 1000 gals/month	6,960
4 55 gallon drums of oil/month	12,000

Elimination of weekend work which constitutes overtime pay and additional fringe benefit costs/month.

27,000
\$127,860/Year
in Savings

SOURCE: Montana Department of Commerce

TABLE 1-3

RDM SIDING

Net Present Value and Benefit Cost Ratio Calculation

Number of Years = 5

Discount Rate = 4.0 Percent

<u>YEAR</u>	<u>SIDING COSTS</u>	<u>FTEDLDER*</u> <u>COSTS</u>	<u>TOTAL COSTS</u>	<u>PRESENT VALUE</u>	<u>SWITCHING BENEFITS</u>	<u>EFFICIENCY BENEFITS</u>	<u>TOTAL BENEFITS</u>	<u>PRESENT VALUE</u>
1987	43.1	10.0	53.1	53.1	14.0	127.9	141.9	141.9
1988	0.0	10.0	10.0	9.6	14.0	127.9	141.9	136.4
1989	0.0	10.0	10.0	9.2	14.0	127.9	141.9	131.2
1990	0.0	10.0	10.0	8.9	14.0	127.9	141.9	126.1
1991	0.0	10.0	10.0	8.5	14.0	127.9	141.9	121.3
TOTAL	43.1	50.0	93.1	89.3	70.0	639.5	709.5	656.9

Benefit Cost Ratio = 7.35

Net Present Value = 567.6

Cost and Benefits in Thousands of Dollars

* Front-end loader

SOURCE: Montana Department of Commerce

APPENDIX 1-A
Time and Motion Study

YARD WORK

Make Up Slag Train
Assume 5 Loads and 5 Mtys (Empties) at Plant

<u>Without Siding:</u>	<u>Dist.</u>	<u>Time</u>
1. Lite engine from yard to RDM plant	.5	5
2. Walk train and couple cars	-	10
3. Pull 10 cars to scale	1.0	10
4. Cut off loads	-	5
5. Pull mtys thru yard	.5	5
6. Shove mtys to plant	1.5	15
7. Lite engine back to scale	1.0	10
8. After weighing line up for shipping	<u>.4</u>	<u>10</u>
	4.9	70

With Siding:

1. Lite engine from yard to RDM Plant	.5	5
1.1 All cars will be in siding by RDM		
2. Run to east switch	.2	1
3. Grab 5 loads off east end, leave mtys	-	10
4. Shove 5 loads to scale	1.2	12
5. After weighing line up for shipping	<u>.4</u>	<u>10</u>
	2.3	38

SHIP DAY

No mtys back from Butte, respot Plant upon return.

<u>Without Siding:</u>	<u>Dist.</u>	<u>Time</u>
1. Spot caboose on west end of made up train in yard	.5	6
2. Go to RDM Plant	1.4	15
3. Walk train and couple cars	-	15
4. Pull all cars to Yard Track 4	1.0	10
5. Run thru yard and back to East end	1.4	10
6. Grab made up train off shipping track	-	5
6.1 Go to Butte and return lite*		
7. Pull loads off Track 4, shove to scale track for weighing	.5	10
8. After weighing line up on shipping track	.4	10
9. Come out of shipping track (East end), run through yard, couple with mtys on Track 4	1.8	15
10. Shove mtys to plant	1.5	15
11. Run back to yard	<u>.5</u>	<u>5</u>
	9.0	116

- * 33% of time a respot is required on the way to Butte which means respotting RDM Plant with all cars that were put on Track 4; requires a runaround of 1.8 miles plus 0.5 miles to plant - about 30 minutes. Upon return, all cars from RDM Plant are shoved into yard, 0.5 miles, 10 minutes.

Total - 2.8 miles, 40 minutes.

<u>With Siding:</u>	<u>Dist.</u>	<u>Time</u>
1. Spot caboose on west end of train on shipping track	.5	6
2, Grab made up train off shipping track	.9	5
2.1 Main line clear by RDM, therefore no need to go to RDM Plant		
2.2 Go to Butte and return lite		
3. Pick loads off east end of new track	-	5
3.1 RDM will respot themselves		
4. Shove to scale track for weighing	1.1	15
5. After weighing line up on shipping track	<u>.4</u>	<u>10</u>
	2.9	41

SHIP DAY

Mtys back from Butte, respot Plant upon return.

<u>Without Siding:</u>	<u>Dist.</u>	<u>Time</u>
1. Spot caboose on west end of made up train in yard	.5	6
2. Go to RDM Plant	1.4	15
3. Walk train and couple cars	-	15
4. Pull all cars to Yard Track 4	1.0	10
5. Run thru yard and back to East end	1.4	10
6. Grab made up train off shipping track 6.1 Go to Butte and return with mtys*	-	5
7. Set out caboose	-	5
8. Pull mtys to scale from caboose spot	.3	5
9. Take engine thru yard, return to East end and couple into loads on Track 4	1.8	10
10. Pull loads off Track 4, shove to scale for weighing	.5	10
11. After weighing, pull whole train off scale from East end	.5	5
12. Cut out and spot loads on shipping track	.4	10
13. Go in on Track 4 with mtys, couple with existing mtys	.4	10
14. Come out and run around	1.8	15
15. Shove mtys to plant	1.5	15
16. Run back to yard	<u>.5</u>	<u>5</u>
	12.0	151

* 33% of time a respot is required on the way to Butte which means respotting RDM Plant with all cars that were put on Track 4; requires a runaround of 1.8 miles plus 0.5 miles to plant - about 30 minutes. Upon return, all cars from RDM Plant are shoved into yard, 0.5 miles, 10 minutes.

Total - 2.8 miles, 40 minutes.

<u>With Siding:</u>	<u>Dist.</u>	<u>Time</u>
1. Spot caboose on west end of made up train in yard	.5	6
2. Grab made up train off shipping track	.9	5
2.1 Main line clear by RDM, therefore no need to go to RDM Plant		
2.2 Go to Butte and return with mtys		
3. Set out caboose	-	5
4. Pull mtys to scale from caboose spot	.3	5
5. After weighing, shove mtys to RDM Plant	.9	10
6. Go to east end of new siding, grab loads	.2	5
7. Shove loads to scale for weighing	1.2	10
8. After weighing line up on shipping track	<u>.4</u>	<u>10</u>
	4.4	56

SOURCE: Montana Department of Commerce

SPRING CREEK WYE
CENTRAL MONTANA RAIL

The 1984 Montana Rail Plan Update addressed various alternative rehabilitation projects on the Moccasin-Geraldine line including a wye construction project (Chapter 5-139).

The proposed Spring Creek Wye project addressed in this Supplement consists of the construction of approximately 4300 feet of new track connecting two existing rail lines, see Exhibit A. The purpose of the project is to alleviate the need to rehabilitate the Spring Creek trestle. The project will also shorten running times for trains operating from the Geraldine line to Moccasin for interchange with Burlington Northern.

The status and issues concerning the subject project are summarized below:

- Trains operating from Central Montana Rail (CMR) connect with Burlington Northern at Spring Creek Junction. However, the interchange track is located at Hanover which makes it necessary for CMR trains to cross the Spring Creek trestle to reach the interchange track. Burlington Northern has plans to abandon this section of track and turn it over to CMR. When CMR gains control it will be necessary for them to take their traffic to Moccasin for interchange. Without the construction of the Spring Creek Wye project, it will be necessary to continue to maintain and use the Spring Creek trestle to reach Hanover in order to place locomotives on the headend of trains.
- The Spring Creek trestle is a 1,392 foot timber bridge over Spring Creek. The 87 span structure has a maximum height of 85 feet above the waterline and is built of untreated timber piles and framing. There are two fire-break steel spans and supporting towers located approximately at the third points of the structure. The upper portions of the trestle appear to be in good condition. The lower portions of support bents have been extensively remodeled to replace piles and timber framing that have

deteriorated since construction in 1912 and rebuilding in 1931. Many posts are banded with steel strapping to avoid replacement of split timbers. Extensive rehabilitation was done on the structure by a private firm in 1970. It is recognized within the trade that rehabilitation of structures of this construction need major work every 15 years. Burlington Northern Railroad estimated in ICC Docket No. AB-6 (Sub-No. 175F) that rehabilitation cost for the Spring Creek trestle, to support Cooper E60 live load or 263,000 pound loading, would be \$700,000.

The construction of the Spring Creek wye would eliminate the Spring Creek trestle and its need for rehabilitation.

Time Savings

It is estimated that each crew will save at least between one and one-half to two hours on any trip running from Denton to the Moccasin interchange and return. Their greatest benefit will be for crews handling trains from the interchange through to Geraldine. One crew could run from Denton to Moccasin and return to Geraldine within the Federal Hours of Service for train and engine personnel of 12 hours.

Schedule without the Spring Creek Wye:

Denton - Home Terminal (initial terminal and air test)	:30
Denton - Hanover (25 miles)	1:20
Hanover (run around train and air test)	:45
Hanover - Moccasin (21 miles)	2:00
Moccasin Interchange (set out, pick up cars, and air test)	:45
Moccasin - Hanover (21 miles)	2:00
Hanover (run around train and air test)	:45
Hanover - Denton (25 miles)	1:20
Denton (set out and air test)	:30
Denton - Geraldine (41 miles)	<u>2:10</u>
Total	12:05

This schedule would violate the Federal Hours of Service for trains going through to Geraldine. The Spring Creek wye would eliminate the time at Hanover allowing the typical crew extra time in case of trouble to complete their assignment without violation.

Schedule with proposed Spring Creek Wye:

Denton - Home Terminal (initial terminal and air test)	:30
Denton - Spring Creek Wye (23 miles)	1:05
Spring Creek Wye - Moccasin (19 miles)	1:50
Moccasin Interchange (set out, pick up cars and air test)	:45
Moccasin - Spring Creek Wye (19 miles)	1:50
Spring Creek Wye - Denton (23 miles)	1:05
Denton (set out and air test)	:30
Denton - Geraldine (41 miles)	<u>2:10</u>
Total	9:45

Construction of the Spring Creek wye would save \$200.00 in additional crew costs for each trip to Geraldine compared to maintaining the present operation.

Construction Costs

The expense of constructing the wye will be \$274,351. These costs are tabulated in Table 2-1 and include only construction related costs.

Benefit-Cost Analysis

<u>Description</u>	<u>Project Cost</u>	<u>Present Value (1)</u>			<u>Benefit/ Cost Ratio</u>
		<u>Benefit</u>	<u>Cost</u>	<u>Net</u>	
Spring Creek Wye	\$274.4	596.1	505.8	90.3	1.18

- * Discount Rate - 4 Percent
Project Life - 10 Years

Source: Montana Department of Commerce

Conclusion

The benefit/cost ratio for this project is positive. In addition to the annual time and cost savings associated with this project, one can consider the positive impacts of crew safety and company liability exposure. This project will benefit this small railroad operation and provide long term security for continued rail service to communities dependent on rail transportation. It is recommended that this project receive federal funding.

Construction Estimate

<u>Spring Creek Wye Connection</u>	4,300 ft.	
Engineering		\$ 5,000
Land Purchase, 15 acres @ \$3,000 acre		45,000
Grading, .814 mi., 37,267 cu. yd. @ \$2		74,534
Culvert, 48" x 42'		3,700
Road Crossing		4,500
Crossties, #4 (.814 mi. x 3,250 mi.) @ \$20 ea.		52,910
Tie Plates (.814 mi. x 6,500 mi.) @ 2.75 ea.		14,550
Spikes (.814 mi. x 13,000 mi.) @ .36 ea.		3,810
Rail (.814 mi. x 158.4 T. mi.) @ \$175 ton		22,564
Joint Bars (.814 mi. x 320 mi.) @ \$8 pr.		2,084
Bolts, Locks and Nuts (.814 mi. x 1,280 mi.) @ \$2 ea.		2,084
Anchors (.814 mi. x 2,560 mi.) @ \$1.15 ea.		2,396
Ballast (.814 mi. x 1,200 cu. yd. mi.) @ 5 cu. yd.		4,885
Lay Track and Distribute Material		12,000
Fence, 8,600 ft. @ \$2.19 ft.		18,834
Surface, Line and Dress		<u>5,500</u>
Total Construction Cost		\$274,351

SPRING CREEK CONNECTION TIME SAVINGS ESTIMATE

It is estimated each crew will save between one and one-half to two hours on any trip running from Denton to Moccasin interchange and return. The greatest benefit will be crews handling trains from the interchange through to Geraldine. One crew could run from Denton to Moccasin and return to Geraldine within the Federal Hours of Service for train and engine personnel of 12 hours.

Schedule without Spring Creek Connection:

Denton (initial terminal and air test)	:30
Denton-Hanover (25 miles)	1:20
Hanover (run around train and air test)	:45
Hanover-Moccasin (21 miles)	2:00
Moccasin (set out, pick up cars and air test)	:45
Moccasin-Hanover (21 miles)	2:00
Hanover (run around train and air test)	:45
Hanover-Denton (25 miles)	1:20
Denton (set out and air test)	:30
Denton-Geraldine (41 miles)	<u>2:10</u>
	12:05

This schedule would violate the Federal Hours of Service for trains going through to Geraldine. The Spring Creek Connection would eliminate the time at Hanover allowing the typical crew extra time in case of trouble to complete their assignment without violation.

Construction of the Spring Creek Connection would save \$200.00 in additional crew costs for each trip to Geraldine compared to the present operation.

SPRING CREEK TRESTLE (BRIDGE 1014)

The Spring Creek trestle is a 1,392 foot timber bridge over Spring Creek. The 87 span structure has a maximum height of 85 feet above the waterline and is built of untreated timber piles and framing. There are two firebreak steel spans and supporting towers located at approximately the third points. The upper portions of the trestle appear to be in good condition. The lower portions of support bents have been extensively remodeled to replace piles and timber framing that have deteriorated since construction in 1912 and rebuilding in 1931. Many posts are banded with steel strapping to avoid replacement of split timbers. Extensive rehabilitation was done on the structure by a private firm in 1970. It is recognized within the trade that rehabilitation of structures of this construction need major work every 15 years. Burlington Northern estimated in ICC Docket No. AB-6 (Sub-No. 175F) that rehabilitation cost to the Spring Creek trestle, to support Cooper E60 live load or 263,000 pound loading, would be \$700,000.00.

